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Triple Splits from Proto-Buli-Kɔnni

Michael Cahill

1. Introduction

Buli and Kɔnni are Gur languages spoken in northern Ghana, in the Oti-Volta subgroup of Gur (Naden 1988, 1989), and comprise a subgroup of their own (Naden 1988:18). Kɔnni has approximately 2500 speakers, Buli about 80,000. Surrounding languages (Sisaala, Kasem, Mampruli) are all larger ones, each having over 100,000 speakers. Buli has a relatively long history of linguistic study (e.g. Manessy 1975, Prost 1974) while Kɔnni is comparatively unknown. Naden wrote a summary of a preliminary linguistic survey (Naden 1986). The only other published language data on Kɔnni are by Cahill (1991, 1992, 1994, 1996, to appear a, b, *etc.*).

Among the interesting phenomena in the reconstruction of the consonants of Proto-Buli-Kɔnni (hereafter PBK) is a pair of triple splits. In the first split, ***p** has reflexes of **h, y, w** in modern Kɔnni. In the second split, *ŋ has reflexes of ŋ, ɲ, **h** in modern Kɔnni. Interestingly, both of these sound changes are conditioned by the particular vowel following the consonant in question. The purpose of this paper is to document and examine these changes. Naden (1986) noted in passing that in words in which other Gur languages contained **p,** Kɔnni had corresponding **y, w**. These and the additional reflex of **h** from ***p** were first fully reported and analyzed in Cahill (1991). Both triple splits examined here are also discussed in the larger context of PBK consonants in Cahill (1995).

The Kɔnni data in this paper is from my own field notes and recordings, mostly from the village of Yikpabongo. The Buli data is from Kröger's 1992 Buli-English Dictionary, supplemented by an unpublished phonology by Todd Poulter and a tape recording of the Swadesh 100 list.

Below are given the phonemic inventories of modern Kɔnni and Buli.

(1) **Kɔnni Phonemic Consonants**

	Labial	Alveolar	Palatal	Velar	Labial-velar	Glottal
stops	p, b	t, d		k, g	kp, gb	
affricates			tʃ, dʒ			
fricatives	f, v	s, z				h
liquids		l, r				
nasals	m	n	ɲ	ŋ	ŋm	
glides			y	w		

(2) **Buli Phonemic Consonants**

	Labial	Alveolar	Palatal	Velar	Labial.-velar
stops	p, b	t, d		k, g	kp, gb
affricates			tʃ, dʒ		
fricatives	f, v	s, z			
liquids		l, r			
nasals	m	n	ɲ	ŋ	ŋm
glides			y	w	

As can be readily seen, the Buli and Kɔnni phonemic inventories are almost identical, the only difference being that Kɔnni has /h/ while Buli does not. This bare fact is somewhat misleading; in previous research, I document that Kɔnni has undergone approximately fifteen consonantal changes from PBK, while Buli has undergone only five (Cahill 1995).[1] That Kɔnni is the more innovative language will be seen in this paper as well.

Note that [r] is actually an allophone of /d/ in both Kɔnni and in Buli, but is orthographic in both, and will be transcribed as such in the data below.

2. The proto-stop triple splits

2.1 Triple Split from *p

This section is a refinement of the analysis in Cahill (1991), including here more accurate and relevant vowel data and reconstructions. In that work, data from fourteen other Gur languages was examined to establish the existence of ***p** in the relevant forms

[1] This case neatly reminds us that simply comparing phonemic inventories of related languages can be quite misleading in working out language relationships. Correspondences among segments in specific lexical items and other morphemes are what is crucial when comparing languages.

in proto-Gur. Here I assume the existence of ***p** in the inventory of PBK, as represented by the relevant Buli forms below.

Tone is contrastive in both languages, but is omitted here as irrelevant to the matter under discussion. Kɔnni forms listed are phonemic. Buli forms are as reported in Kröger's dictionary, with the addition of a phonetic vowel notation to the right where different than his dictionary entry. The phonemic status of some Buli vowels continues to be a point of uncertainty, with Kröger assuming a 5-vowel inventory, and others including at least /ɔ, ɛ/ in the set of vowels.

Words illustrating three Kɔnni correspondents of Buli /p/ are given below. Singulars and plurals are separated by single slashes.

(3)	gloss	Kɔnni	Buli
h~p	bark	-haŋ / -hagɪtɪ	pauk / pakta
	new	-haalɪŋ	paalik
	debt	hamɪŋ	pami/pama
	strength	hagɪrɪŋ	pagra
	woman	hɔgʊ / hɔɔba	ni-pok / ni-pooba [ɔ]
y~p	white	-yɛɛlɪŋ / -yɛɛla	pieluk / pielita
	bright, to be	yɛntɪ	pienti
	sheep (pl)	yise	piisa
	ash	tanyeelɪŋ	tampelem
	arrow, nail	yɪɪŋ/yɪɪma	pɛ̄ī/piema
	Frafra potato	yɛsɪŋ	piesiri ~ piesi/piesa
w~p	flowers	wʊte	puuta
	rotten	-wʊʊsɪŋ / -wʊʊsa	poosidi / poosa
	shave head, to	wʊŋ	poni
	shell, to	wʊrɪ	poti
	stir porridge, to	wɔɔrɪ	poriŋi
	rubbish heap	taŋgwoŋ	tampoi

The single Buli stop /p/ corresponds to Kɔnni /h, y, w/. If we consider these three correspondences, it is clear that the vowel following ***p** is the factor which conditions the particular reflex which occurs in Kɔnni. If the ***p** occurs before /a/ or /ɔ/, the Kɔnni reflex is /h/, if before /i, ɪ, e, ɛ/, the Kɔnni reflex is /y/, and before /u, ʊ, o, ɔ/, the Kɔnni reflex is /w/.

The same change apparently took place word-medially as word-initially (see *tanyeelɪŋ~tampelem* 'ash' and *taŋgwoŋ~tampoi* 'rubbish heap'). In 'rubbish heap,' there is the further change that [w] has become [gw]. The [g] is inserted as a strengthening, or possibly an emergent stop, to use Ohala's terminology. There is no other [ŋw] sequence between vowels in my data.

The exact formulation of the sound change is dependent on the reconstruction of the proto-vowels, since there is an overlap of the conditioning vowels to consider. When

the vowel following the ***p** is [ɔ], we have in some cases ***p > h**, as in **hɔgʊ/pɔk** 'woman' and in other cases ***p > w**, as in **wɔɔrɪ/porɪŋɪ** 'to stir.' The conundrum is solved when we examine the vowels of PBK more closely. In Cahill (1991), the cognate forms for 'woman' in various languages are quite mixed in whether they have **a**, **ɔ**, or **o**. Due to governmental policies in the past, the orthographic [o] in some of these languages may actually represent phonemic /ɔ/. [2]

(4) 'woman' in various Gur languages

Kɔnni	hɔgʊ	Birifor	pɔɔ
Buli	ni-pɔk	Yom	pɔga
Mampruli	poga	Bimoba	poo
Dagbani	paga	Vagla	haaŋ
Kusaal	poʔa		

I contend that 'woman' in proto-Gur had ***a** rather than a rounded vowel. The fact that so many Gur languages in different branches of Gur have either **ɔ** or **o** is explained by the idea of the central vowel **a** becoming backed before the back velar consonant, a very natural and common sound change. (It is not irrelevant to note that many of these languages are in rather close contact, and the influence of neighboring languages cannot be lightly dismissed.) So in many languages, including both Buli and Kɔnni, the sound change ***a > ɔ** before velars occurred. With this background in place, we see that the sound change of ***p > h** occurred only before ***a**. We are left with the following sound changes.

(5) Sound changes from PBK ***p** to Kɔnni:

a.	*p > h	before	a
b.	*p > y	before	i, ɪ, e, ɛ
c.	*p > w	before	u, ʊ, o, ɔ

Given that ***p** weakened severely into a glide, the nature of that glide is quite naturally taken from the adjacent vowel. A front vowel gives rise to a front glide **y**, a round vowel gives rise to a rounded glide **w**, and the pharyngeal vowel **a** gives rise to the glottal **h.** Conceptually, ***p** weakened to the point of deletion, but native Kɔnni contentive words are required to be consonant-initial, so the weakest consonant - a glide nearest in value to the following vowel - is the result.

One other complication must be considered before leaving the subject of ***p**. There are a number of cognates in Buli and Kɔnni which *both* have /p/, as below.

[2] In past years (though not so much at the present time), governmental policy was to avoid non-English-appearing orthographies. For vowels, the English {a,e,i,o,u} were the only ones used in several languages which demonstrably had the vowels /ɪ, ʊ, ɛ, ɔ/. For /ɔ/, orthographies generally wrote the grapheme {o}.

(6)		English	Kɔnni	Buli
	p~p	peel, to	pasɪ	piesi
		roof, to	pili	pili
		log	dampalɪ / dampala	dampali / dampala

There are a number of possible explanations for this correspondence. If we do not hold to a strong version of the regularity of sound change, we may merely consider these words as some which did not undergo the sound changes noted above. However, other more attractive explanations are at hand.

Three alternate hypotheses can be considered. The first is that there were actually *two* sources of present Gur /p/, possibly a *fortis* and *lenis* ***p** or an ejective vs. non-ejective ***p**. However, there is no evidence for this across other Gur languages. A second hypothesis is that there is some conditioning factor not considered above which prevented some words from undergoing the above sound changes. I see no evidence of any such conditioning factor. Neither of these hypotheses has any evidence in its favor; both are discussed more fully in Cahill (1991).

What remains is that the **p~p** correspondence can be accounted for by borrowings. In this scenario, these words were borrowed into both languages after they were differentiated and the "massive P shift" took place in Kɔnni. If they had been present in the proto-language before the split of ***p**, these would also have undergone the split. It is quite possible, given the sociological setting, that these were first borrowed into Buli and then transmitted to Kɔnni, but this remains speculative. More investigation is required to specifically find the source of these borrowings, but this remains the most plausible source of the **p~p** correspondence.

2.2 Triple Split from *ŋ

Parallel to the triple split that ***p** has undergone, PBK ***ŋ** also has undergone a split into three reflexes. As before, it is the Kɔnni which has undergone the changes, while Buli has retained the proto-form of the consonant. Data is much more limited for this set of correspondences, as seen below.

(7)		English	Kɔnni	Buli
	h~ŋ	boat	haarɪŋ	ŋaaruŋ
		'black-berry' tree	haarɪŋ	ŋaariŋ
		the (definite suffix)	-ha	-ŋa
		them	ha	ŋa
	ɲ~ŋ	neck	- / ɲie	ŋiri/ŋie
		things	ɲinti	ŋanta
	ŋ~ŋ	chew	ŋɔbɪ	ŋobi [ɔ]

Words illustrating the full set of vowels are not available, but it is probable that, as in the case of ***p**, the vowel following the *ŋ is the factor which conditions the change (or lack of change, in the ŋ~ŋ correspondence). The documented sound changes are limited to the three vowels **a, i,** ɔ:

(8) Documented sound changes of *ŋ into Kɔnni:
a. *ŋ > h / __a
b. *ŋ > ɲ / __ i
c. *ŋ > ŋ / __ ɔ

In spite of the limited data, it is not unreasonable to assume the same sets of conditioning vowels as were active in the sound changes from ***p** discussed above. If so, then there are two sets of sound changes conditioned by the same sets of vowels following.

3. Further discussion

3.1 The Kɔnni [h]

As noted above, /h/ is the only consonantal phoneme of Kɔnni that Buli lacks. This Kɔnni /h/ had its sources in *p and *ŋ, as discussed above, but there are two other sources of synchronic Kɔnni /h/. The table below gives examples of all of these.

(9)	English	Kɔnni	Buli
h~p	new	-haalɪŋ / -haala	paalik
	strength	hagɪrɪŋ	pagra
h~ŋ	boat	haarɪŋ	ŋaaruŋ
	'black-berry' tree	haarɪŋ	ŋaariŋ
h~s	bush	haagɪŋ	sagi
!	leopard ("bush-dog")	haŋ-gbaaŋ	goa-biak
h~w	grass	hʊʊŋ / hʊʊtɪ	wuuk / wuuta

Though a weakening of **s** to **h** is not uncommon (and the related Gur language Dagbani even has **-hi** and **-si** as allomorphs of one of the plural morphemes) the **h~s** correspondence between Buli and Kɔnni is limited to this one item in my data, and other ***sa...** items have reflexes of **sa...** in both languages. The word for 'bush' above therefore remains a unique corespondence. [3]

[3] The words for 'bush' and 'leopard' are interesting. 'Bush' in both Kɔnni and Buli refers not to a plant, but to an area outside a village, e.g. "He's gone to the bush" means he has gone to the farm or hunting or gathering firewood. Buli has two words for 'bush': **sagi** is the area used for farming, and **goai** is the more remote area for activities such as hunting and gathering grasses. Kɔnni has only one word **haagɪŋ** which includes both ranges of meaning of 'bush,' but which is cognate to the 'near-bush' word **sagi** in Buli. The word for 'leopard' in both languages is a compound word, literally 'bush-dog.' (In a Kɔnni compound, the

As with the **h~s** correspondence, the **h~w** correspondence is unique to one word, and must remain so for the present.

3.2 The Nangurima dialect of Kɔnni

Though it is a small language group, Kɔnni is not a homogeneous language. Discussion thus far has centered on the more prestigious and more widely-spoken Yikpabongo dialect. However, one village, Nangurima, speaks a distinctly different dialect, and one of the most salient features of this dialect is pertinent to the discussion here. The Nangurima dialect followed the Kɔnni split of ***p** > **y, w** as did Yikpabongo, but wherever a Yikpabongo word has **h**, Nangurima has **ŋ**.

(10)

	gloss	Yikpabongo Kɔnni	Nangurima Kɔnni	Buli
h/ŋ~p	bark	-haŋ	-ŋaŋ	pauk
	new	-haalɪŋ	ŋaalɪŋ	paalik
	woman	hɔgʊ	ŋɔgʊ	ni-pɔk
	strength	hagɪrɪŋ	ŋagɪrɪŋ	pagra
	arrive, reach	haarɪ	ŋaarɪ	paari
h/ŋ~ŋ	boat	haarɪŋ	ŋaarɪŋ	ŋaaruŋ
	them	ha	ŋa	ŋa

Thus Nangurima Kɔnni completely lacks the /h/ phoneme of Yikpabongo Kɔnni, and resembles Buli in that respect. It is relevant to note that Nangurima is the Kɔnni-speaking village closest to the Buli area and under the most Buli influence.

***ŋ** and ***p** are documented outside PBK, back to at least Proto-Central Gur (Naden 1989), which includes most of the Gur languages. Proto-Central Gur lacked the phoneme ***h**, and this is another reason why its presence in Kɔnni must be attributed to a recent innovation.

4. Conclusion

A completely certain account of the development of the reflexes of *ŋ is perhaps beyond reach, but a reasonable scenario can be proposed. In this scenario, when Buli and

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first noun is often reduced, typically to one syllable, thus **haŋ-** rather than **haagɪŋ-** in 'leopard'.) But while Buli naturally uses the 'far bush' term in compounding 'leopard', Kɔnni, not having an option, uses the only word for 'bush' available. What is interesting is that, at least at the time the proto-language made this split, the components of *meaning* of 'leopard,' that is, 'bush-dog,' were more important than the sounds involved. The Kɔnni word has no relation to the initial sounds of Buli **goa-biak** at all, but it is a direct translation of the component morphemes. The word for 'leopard' in PBK was probably similar to the Buli form.

Kɔnni split, *ŋ changed to ɲ before front vowels and remained as ŋ elsewhere. But when the Yikpabongo dialect split off from Nangurima, the Yikpabongo dialect lost the nasalization before **a** and changed ŋ to **h** in this environment. Here, Nangurima and Buli preserve the older forms. To sum up the changes:

(11) a. *ŋ > ɲ before front vowels in Kɔnni
b. *ŋ > **h** before **a** in Yikpabongo Kɔnni

The development of the reflexes of ***p*** is more complex, and more uncertain as well, due to the Nangurima data. What is certain is that in the Buli/Kɔnni split, Kɔnni changed ***p* > y, w, X**, conditioned by the following vowel. The question is the nature of **X**, since Nangurima Kɔnni has ŋ for these reflexes, but Yikpabongo Kɔnni has **y** for them.

If the **X** is ŋ, and the sound change was ***p* > ŋ**, then Yikpabongo had a further change of **ŋ > h**, a not unreasonable change. We know from (11b) that the sound change **ŋ > h** did occur in Yikpabongo Kɔnni, and this scenario would unify these changes. However, several intermediate stages would be needed for the initial change of ***p* > ŋ**; it is too large a change to happen in one step.

A preferred scenario is that **X** is **h**, and the sound change was ***p* > h**. This has the advantage of being more in parallel with the sound changes that produced the other glides, as well as being attested in other languages besides the Gur group. However, we must then account for the change in Nangurima Kɔnni of **h** > ŋ. Though spontaneous nasalization is possible and indeed well-attested cross-linguistically[4], another plausible motivation for the correspondence is the Buli influence on Nangurima, with Buli's pervasive ŋ as a model for change. These sound changes stemming from ***p*** may be summed up as:

(12) a. ***p* > y, w** in Kɔnni before front and back rounded vowels, respectively
b. ***p* > h** in Kɔnni before **a**
c. **h** > ŋ in Nangurima Kɔnni

[4] For example, the Avestan reflex of PIE ***s*** between two **a**'s is apparently an aspirated engma. Since ***s* > h** almost everywhere else in Avestan, it is likely that ***asa*** passed through a stage of **aha** before the final outcome of **aŋ^{h}a**, the last sound change being h > ŋ^{h}, similar to what I am positing here. Thanks to Brian Joseph for pointing out this example.

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